EnsPost Configuration Guide

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1 Overview

In addition to installing software, adding EnsPost components to CHPS requires adding and updating FEWS configuration files, and using the FEWS GUI to verify the installation is successful. This guide provides instructions for configuring CHPS to execute EnsPost in order to post process stream flow ensembles and account for hydrologic uncertainty.

For cases where a configuration change contains text that is specific to an RFC (new or existing file) a description of the text and/or a sample file is provided.

1.1 *Notation*

Within this document, the following notation is used:

- All graphical interface components are **Capitalized and in Bold**.
- All XML snippets are in this font.
- All command line entries are in this font.
- All important terms defined in the Section 1.2, Terminology, are *italicized*.

1.2 *Terminology*

- *installation stand-alone*: The stand-alone in which the EnsPost components will be installed, setup in Section 1.4.
- *installation segment*: The id of the first segment for which EnsPost must post-process ensembles for that segment. It will be denoted <*segment*> below when used in the name of a directory or file, except when referred to within a snippet of XML, in which case it will be referred to as *segment*; this is to avoid confusion with other uses of '<' and '>' in the XML syntax
- *installation forecast group* –or– *fgroup*: The forecast group in which the *installation segment* is located. It will be denoted <*fgroup*> below when used in the name of a directory or file, except when referred to within a snippet of XML, in which case it will be referred to as *fgroup*; this is to avoid confusion with other uses of '<' and '>' in the XML syntax.

1.3 *Directories of Note*

The following directories will be referred to in the instructions provided below:

- <*region_dir*>: The *installation stand-alone* (see Section 1.4) region home directory, typically "##rfc_sa".
- <*configuration_dir*>: The stand-alone Config directory, typically <*region_dir*>/Config.

- <*tar_root_dir*>: The directory where the release package was untarred.
- <*ens_post_root_dir*>: The directory selected to hold EnsPost parameter files

1.4 *Pre-installation Steps*

1. Install the HEFS release as described in the *HEFS Install Notes*.

2. Install the EnsPostPE as described in the *EnsPostPE Configuration Guide* and use the software to estimate parameters for the segments (gages) for which EnsPost must execute. This must be done before confirming the installation in Section 2.3. The parameter .tgz files generated by EnsPostPE will be located in the directory <*ens_post_root_dir*>/ensPostParameters and follow this naming convention :

   <locationId>.<parameterId>.enspost.parameters.tgz

3. Create an *installation stand-alone* for initial installation of the EnsPost. The stand-alone must include configuration files added as part of the configuration of the MEFP data ingest and forecast components (it may be the same stand-alone used therein). Additionally, it should include the changes made to global properties within Section 2.3 of the *EnsPostPE Configuration Guide* (the property ENS_POST_ROOT_DIR was added). Configuration changes made here will later be ported to an OC for synchronization to the central server, but only after installation is successful on a stand-alone.

4. Identify a workflow that generates an ensemble of stream flow forecasts. It can be an MEFP-based ensemble workflow (see the *MEFP Configuration Guide: Forecast Components*) or an existing ESP workflow.

Installation instructions below will be based upon the segment, stations, and group identified during the installation of the data ingest components. Instructions for extrapolating to other segments, stations, and groups will be provided.

1.5 *Release Package*

As part of installing the HEFS release, the release package was acquired and untarred in a directory referred to in the *HEFS Install Notes* as <*tar_root_dir*>. Within this document, only the contents of the subdirectory enspost are used. The enspost subdirectory contents are as follows, with a description of each subdirectory:

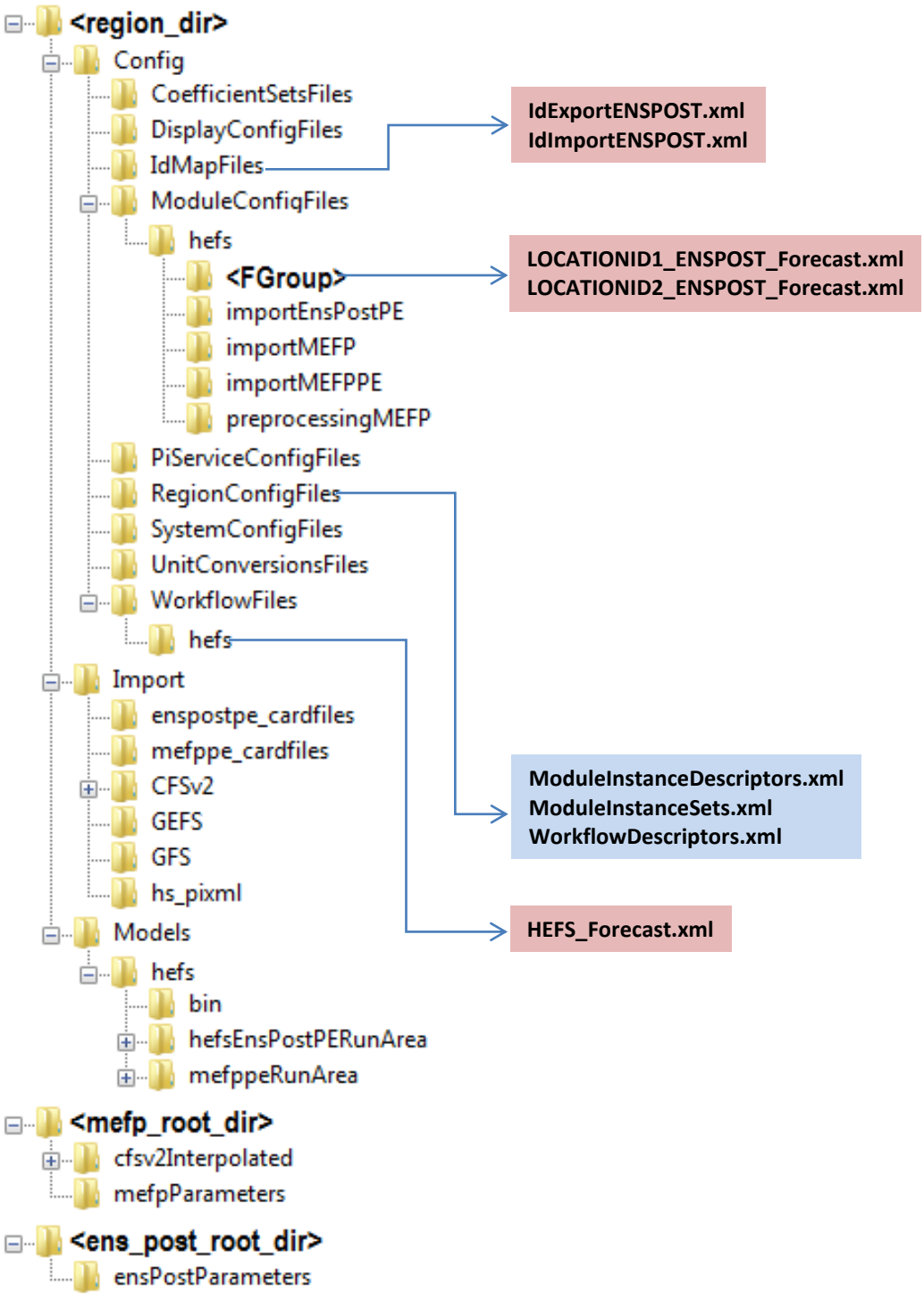
<*tar_root_dir*>/enspost/…
Config – Configuration files to be copied to the parameter estimation stand-alone.
samples – Sample files referred to in the instructions below as needed.
examples – Example configuration files to be used as a reference in the instructions below.

1.6 *Affected Configuration Files*

The diagram in Figure 1 summarizes all configuration files created or modified by the installation steps provided in this document. The directory structure shown includes all directories affected by any HEFS component. Files with a light red background are general across all RFCs, while those with a light blue background are specific to each RFC and require editing. Note the following:

- The directory corresponding to **<ens_post_root_dir>** was created during installation of the EnsPostPE and is pointed to by a global property.
- The directory corresponding to **<mefp_root_dir>** is used by the MEFP and MEFPPE applications and will not be used herein.
- The directories shown under **<region_dir>**/Import were created during installation of the EnsPostPE components and will not be used herein.

Figure 1: Configuration files created or modified during installation.



2 Installing EnsPost Components

This section provides instructions for the following:

- Making needed additions and changes to configuration files in the installation stand-alone
- Verifying the installation of the EnsPost components in the stand-alone
- Synchronizing those changes with the central server

By the end of this section, all modules and workflows necessary for the EnsPost to execute and post-process ensembles will be put in place and verified.

In all sections that follow, changes that must be made to allow for additional segments and forecast groups to be added will be marked by the following: **TO ADD NEW SEGMENT** or **FORECAST GROUP**. The list of those tasks will be summarized in Section 3.

2.1 *Copy New Files and Directories (Required)*

Execute the following command to copy *all* new files and directories that are necessary for running the EnsPost components into the installation stand-alone directory structure

```
cd <tar_root_dir>/enspost
cp –r Config <region_dir>/.
```

Most of the files and directories just copied will not be modified further.

2.2 *Configuration File Changes (All Steps Required)*

Described in the following sections are changes that must be made to the configuration files to setup EnsPost.

2.2.1 Create new File: <*segment*>_ENSPOST_Forecast.xml

Action: Create new module to run EnsPost for the *installation segment* with the following full path name:

<*configuration_dir*>/ModuleConfigFiles/hefs/<*fgroup*>/<*segment*>_ENSPOST_Forecast.xml

See the example below making changes as follows:

- Update the green highlighted timeSeriesSets within the exportTimeSeriesActivity XML element to specify one observed streamflow and an ensemble to post-process for the installation segment, in that order. The locationId XML elements of the observed time series and ensemble must match; us an id-mapping if necessary. Furthermore, that locationId will be used to identify the default parameter file name; see the next bullet item. Also ensure the parameter ID and the timestep are correct. This is especially important if switching from 24 to 6 hour data.
- Modify the magenta highlighted exportRunFileActivity XML element to setup the run-time properties (options) of EnsPost. The properties to define are as follows:

  Required run file properties:
  - **errorModel**: The error model used by EnsPost for post-processing of the provided ensemble. Valid values are "ER0", "ERD", "ERS". See the *Ensemble Postprocessor User's Manual* for more information about the error models. For example:

    <string key="errorModel" value="ERS"/>

  - **parameterDir**: The directory wherein the parameter files generated by EnsPostPE can be found; see Section 1.4. This property should be set using the global property $ENS_POST_ROOT_DIR$ to the following (shown in the example below):

    string key="parameterDir" value="$ENS_POST_ROOT_DIR$/ensPostParameters"/>

  Optional run file properties:
  By default, EnsPost will use the locationId and parameterId XML elements of the input streamflow ensemble to construct the name of the estimated parameters file, as described in Section 1.4. The default parameter file name is

  <locationId>.<parameterId>.enspost.parameters.tgz

  The first two properties listed below can be set to override the default file name, but should only be specified if necessary (for example, the observed time series and ensemble locationId does not match that used in the parameter file name).

- **parameterFile** (optional): Overrides the name of the parameter (.tgz) file for all locations for which EnsPost will run. This cannot be used if the location-specific property, parameterFile.<locationId> (see below), is used. In that case, a run-time error will occur. For example:

  <string key="parameterFile" value="HUNP1ESP.QINE.enspost.parameters.tgz"/>

- **parameterFile.<locationId>** (optional): If EnsPost is configured to run for multiple locations within a single module configuration file, then this will override the parameter file name used for the location specified by <locationId>. This cannot be used if the general option, parameterFile, is used. In that case, a run-time error will occur. For example:

  <string key="parameterFile.CBNK1" value="CBNK1.QINE.enspost.parameters.tgz"/>

- **multiLocationRun** (optional). Set to "yes" if EnsPost is configured run for multiple locations within a single module configuration file. By default, its value is "no". For example:

  <string key="multiLocationRun" value="yes"/>

- **disaggOutput** (optional). Set to "false" to turn off disaggregation in EnsPost, so that the resulting post-processed ensembles will be output in the calibration time step specified during parameter estimation (typically 24-hours). By default, the value is "true" so that disaggregation is performed. For example:

  <string key="disaggOutput" value="false"/>

- **testing** (optional). Used to provide a seed value when running the ERS model. This allows the user the ability to duplicate the output from a run.

- Update the gray highlighted timeSeriesSets within the importTimeSeriesActivity XML to import the output from EnsPost with the correct moduleInstanceId (matching the configuration file name), locationId, and other time series parameters. The timeStep should be set based on the value of the disaggOutput run file property as described above. It is recommended that the importTimeSeriesActivity elements use an ensembleId of "HEFSENSPOST" (see the example below). Otherwise, it will be more difficult to configure Graphics Generator to generate HEFS products.
- Make sure to not modify the blue highlighted lines identifying the id-mappings to use. Default id-mapping files are delivered and can be modified as needed. See Section 4.1.1

An example is provided in the following:

<*tar_root_dir*>/enspost/examples/Config/ModuleConfigFiles/hefs/fgroup/CNNN6DEL_ENSPOST_Forecast.xml

Description: The added Modules are used to run EnsPost to post-process ensembles.

The directory in which this module configuration file should be placed is RFC dependent. The example above

<*configuration_dir*>/ModuleConfigFiles/hefs/<*fgroup*>

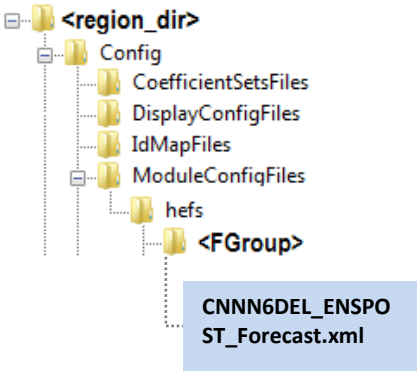
is recommended for initial installation. Once the installation is completed and tested, move the module configuration file if you deem it necessary.

TO ADD A NEW SEGMENT

Copy the EnsPost module created for the *installation location* and rename it to use the name of the second segment. Then update the timeSeriesSets within the exportTimeSeriesActivity XML element, run file properties, and timeSeriesSets defined within the importTimeSeriesActivity XML element as appropriate for the new segment.

Alternatively, if the new segment is to be run within the same module as the *installation segment*, then modify the module configuration file created for the *installation segment* appropriately as follows:

- In the exportTimeSeriesActivity XML element, include the observed time series and ensemble for the new segment.
- Modify the run file properties appropriately, making sure to set multiLocationRun to "yes" and override the parameter file names, if needed, for each location independently.
- Modify the importTimeSeriesActivity to import post-processed ensembles for each segment.

Standard Location: <*configuration_dir*>**/ModuleConfigFiles/hefs/fgroup/**	**Contents:** ***LOCATIONID1_ENSPOST_Forecast.xml***
	<generalAdapterRun xmlns="http://www.wldelft.nl/fews" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.wldelft.nl/fews http://fews.wldelft.nl/schemas/version1.0/generalAdapterRun.xsd"> <general> <description>EnsPost CNNN6DEL</description> <piVersion>1.5</piVersion> <rootDir>%TEMP_DIR%</rootDir> <workDir>%ROOT_DIR%/work</workDir> <exportDir>%ROOT_DIR%/input</exportDir> <exportDataSetDir>%ROOT_DIR%/work/parameters</exportDataSetDir> <exportIdMap>IdExportENSPOST</exportIdMap> <importDir>%ROOT_DIR%/output</importDir> <importIdMap>IdImportENSPOST</importIdMap> <dumpFileDir>$GA_DUMPFILEDIR$</dumpFileDir> <dumpDir>%ROOT_DIR%</dumpDir> <diagnosticFile>%ROOT_DIR%/output/diag.xml</diagnosticFile> </general> <activities> <startUpActivities> <makeDir> <dir>%ROOT_DIR%/work</dir> </makeDir> </startUpActivities> <exportActivities> <exportTimeSeriesActivity> <exportFile>inputs.xml</exportFile> <timeSeriesSets> <timeSeriesSet> <moduleInstanceId>ADDSUB_CNNN6DEL_ADDSPILL_Forecast</moduleInstanceId> <valueType>scalar</valueType> <parameterId>QINE</parameterId> <locationId>CNNN6TOT</locationId> <timeSeriesType>simulated forecasting</timeSeriesType> <timeStep unit="hour" multiplier="6"/> <relativeViewPeriod unit="hour" start="-120" startOverrulable="true" end="0"/> <readWriteMode>read only</readWriteMode> </timeSeriesSet> <timeSeriesSet> <moduleInstanceId>ADDSUB_CNNN6DEL_ADD.USQ_Forecast</moduleInstanceId> <valueType>scalar</valueType> <parameterId>SQIN</parameterId> <locationId>CNNN6TIF</locationId> <timeSeriesType>simulated forecasting</timeSeriesType> <timeStep unit="hour" multiplier="6"/> <relativeViewPeriod unit="hour" start="0" end="120" endOverrulable="true"/> <readWriteMode>add originals</readWriteMode> <ensembleId>MEFP</ensembleId> <ensembleMemberIndexRange start="1961" end="1997"/> </timeSeriesSet> </timeSeriesSets> </exportTimeSeriesActivity> <exportRunFileActivity> <exportFile>%ROOT_DIR%/run_info.xml</exportFile> <properties> <string key="model" value="ohd.hseb.hefs.enspost.adapter.HEFSEnsPostModelAdapter"/> <int key="printDebugInfo" value="0"/> <string key="errorModel" value="ERS"/> <string key="parameterDir" value="$ENS_POST_ROOT_DIR$/ensPostParameters"/> <!-- This variable is required --> <string key="parameterFile" value="*segment*.SQIN.enspost.parameters.tgz"/> <!--

Standard Location: <*configuration_dir*>**/ModuleConfigFiles/hefs/fgroup/**	**Contents:** ***LOCATIONID1_ENSPOST_Forecast.xml***

```
OPTIONAL.  Preferred method since it points directly to the params -->
            </properties>
          </exportRunFileActivity>

      </exportActivities>

      <executeActivities>
        <executeActivity>
          <command>
            <className>ohd.hseb.hefs.utils.adapter.HEFSModelAdapter</className>
            <binDir>$HEFSBINDIR$</binDir>
          </command>
          <arguments>
            <argument>%ROOT_DIR%/run_info.xml</argument>
          </arguments>
          <timeOut>60000</timeOut>
        </executeActivity>
      </executeActivities>

      <importActivities>
        <importTimeSeriesActivity>
          <importFile>outputs.xml</importFile>
          <timeSeriesSets>
            <timeSeriesSet>
              <moduleInstanceId>segment_ENSPOST_Forecast</moduleInstanceId>
              <valueType>scalar</valueType>
              <parameterId>SQIN</parameterId>
              <locationId>lgageLcationId</locationId>
              <timeSeriesType>simulated forecasting</timeSeriesType>
              <timeStep unit="hour" multiplier="6"/>
              <readWriteMode>add originals</readWriteMode>
              <ensembleId>HEFSENSPOST</ensembleId>
              <ensembleMemberIndexRange start="1961" end="1997"/>
            </timeSeriesSet>
          </timeSeriesSets>
        </importTimeSeriesActivity>
      </importActivities>
    </activities>
</generalAdapterRun>
```

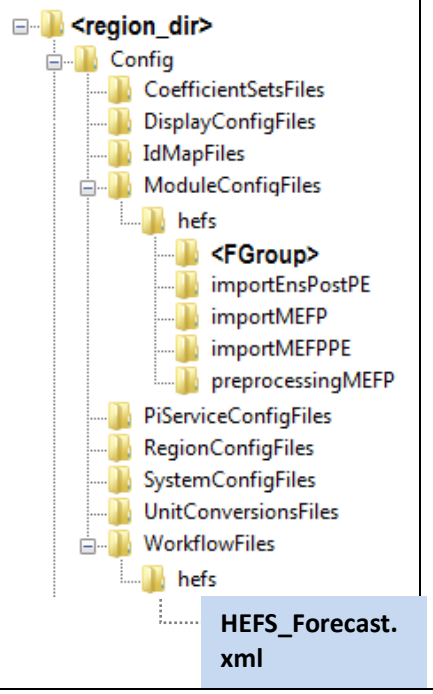
2.2.2 Modify the Existing Ensemble Workflow Configuration File

Action: Modify an existing workflow file (identified in the Pre-installation steps in Section 1.4 Step 4) that generates an ensemble of stream flow forecasts to execute the EnsPost module defined as described in Section 2.2.1. See the example below for the activity XML element to add to the workflow configuration file, replacing *segment* with the segment id so that the moduleInstanceId matches the module created as described in Section 2.2.1.

A sample is provided in

<*tar_root_dir*>/enspost/samples/Config/WorkflowFiles/hefs/HEFS_Forecast.xml

TO ADD A NEW SEGMENT
Identify an existing workflow which contains the proper input data (See Section 1.4 Step 4) and add an activity XML element to execute the EnsPost module for the new segment.

Standard Location: <*configuration_dir*>**/WorkflowFiles/hefs/**	**Contents:** ***HEFS_Forecast.xml (sample name)***
	<?xml version="1.0" encoding="UTF-8"?> <workflow xmlns="http://www.wldelft.nl/fews" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.wldelft.nl/fews http://fews.wldelft.nl/schemas/version1.0/workflow.xsd" version="1.1"> …. <!-- Post process streamflow ensembles using EnsPost --> <activity> <runIndependent>false</runIndependent> <moduleInstanceId>***segment***_ENSPOST_Forecast</moduleInstanceId> </activity> </workflow>

2.2.3 Modify Existing File: ModuleInstanceDescriptors.xml

Action: Define new module instance descriptors in the file:

<*configuration_dir*>/RegionConfigFiles/ModuleInstanceDescriptors.xml

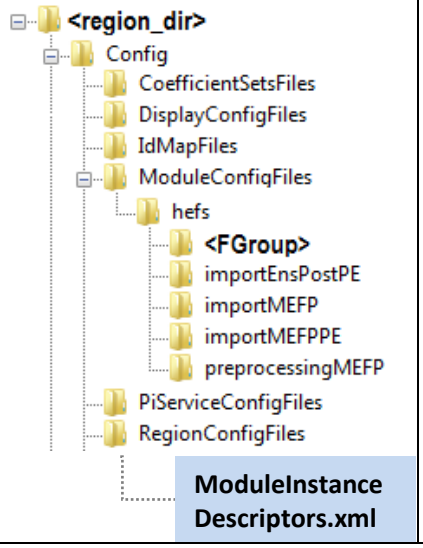
See the example below for text to use, replacing *segment* with the location id of the *installation segment*. A sample is provided in the following file:

<*tar_root_dir*>/enspost/samples/Config/RegionConfigFiles/ModuleInstanceDescriptors.xml

Description: The added modules are used to run the EnsPost to post process the input streamflow ensembles.

All EnsPost modules should be added to a single moduleInstanceGroup. In the example below, that group has id "HEFS_ENSPOST".

TO ADD A NEW SEGMENT
Copy and paste the existing module instance descriptor for *installation segment* and modify it appropriately for the new segment.

Standard Location: <*configuration_dir*>**/RegionConfigFiles/**	**Contents:** ***ModuleInstanceDescriptors.xml***
	<?xml version="1.0" encoding="UTF-8"?> <moduleInstanceDescriptors xmlns="http://www.wldelft.nl/fews" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.wldelft.nl/fews http://chps1/schemas/moduleInstanceDescriptors.xsd" version="1.0"> … **<moduleInstanceGroup id="HEFS_ENSPOST">** **<moduleInstanceDescriptor id="*segment*_ENSPOST_Forecast">** **<moduleId>GeneralAdapter</moduleId>** **</moduleInstanceDescriptor>** **</moduleInstanceGroup>** … </moduleInstanceDescriptors>

2.2.4 Modify Existing File: ModuleInstanceSets.xml

Action: Define new module instance set to contain forecast group specific EnsPost modules:

<*configuration_dir*>/RegionConfigFiles/ModuleInstanceSets.xml

These defined module instance sets may be used elsewhere, specifically in configuration files related to Graphics Generator.

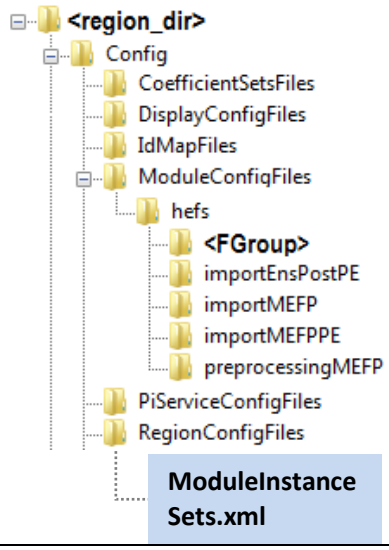
See the example below for text to use, replacing *segment* with the id of the *installation segment*. Also replace the highlighted text to match the moduleInstanceId used to specify the ensemble input to EnsPost for the *installation segment*. A sample is provided in the following file:

<*tar_root_dir*>/enspost/samples/Config/RegionConfigFiles/ModuleInstanceSets.xml

Description: The added workflows are used to define module instance sets referred to in other module configuration files required for EnsPost.

The moduleInstanceId XML elements added in the set EnsPost_Input should match that of the ensemble timeSeriesSet elements specified within the exportTimeSeriesActivity XML element in the module configuration file defined in Section 2.2.1. The moduleInstanceId XML elements added in the set EnsPost_Output should match the file name of that module configuration file.

TO ADD A NEW SEGMENT
Add entries in the module instance sets for any new modules created following steps in Section 2.2.1.

Standard Location: *<configuration_dir>*/**RegionConfigFiles/**	**Contents:** ***ModuleInstanceSets.xml***
	<?xml version="1.0" encoding="UTF-8"?> <moduleInstanceSets xmlns="http://www.wldelft.nl/fews" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.wldelft.nl/fews http://chps1/schemas/moduleInstanceSets.xsd" version="1.1"> … <!-- HEFS EnsPost --> <moduleInstanceSet id="EnsPost_Input" name="EnsPost Input"> <moduleInstanceId>**ADDSUB_CNNN6DEL_ADD.USQ_Forecast**</moduleInstanceId> </moduleInstanceSet> <moduleInstanceSet id="EnsPost_Output" name="EnsPost Output"> <moduleInstanceId>***segment*_ENSPOST_Forecast**</moduleInstanceId> </moduleInstanceSet> … </moduleInstanceSets>

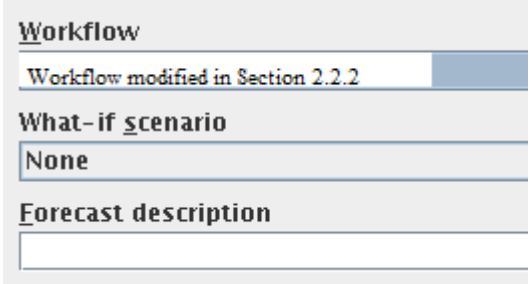
2.3 *Confirm Configuration*

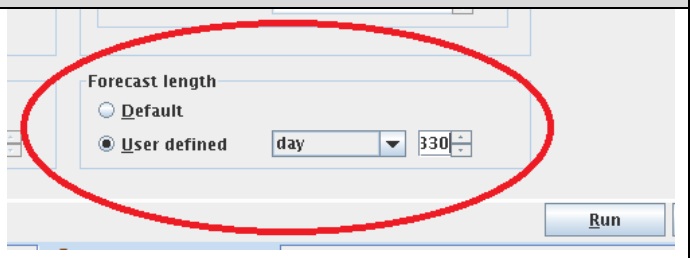
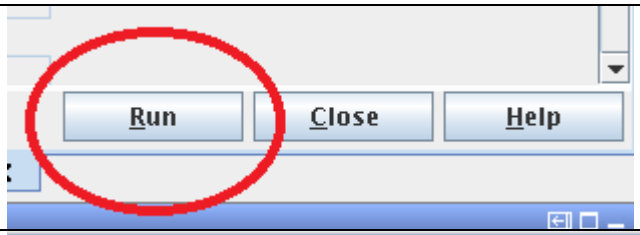
Described below are steps to perform to test that the installation was successful. This requires that a streamflow ensemble (input to EnsPost) can be created for the *installation segment* when running the ensemble workflow. Furthermore, parameters must have been estimated for the *installation segment* with appropriately named parameter file in the directory <*ens_post_root_dir*>/ensPostParameters.

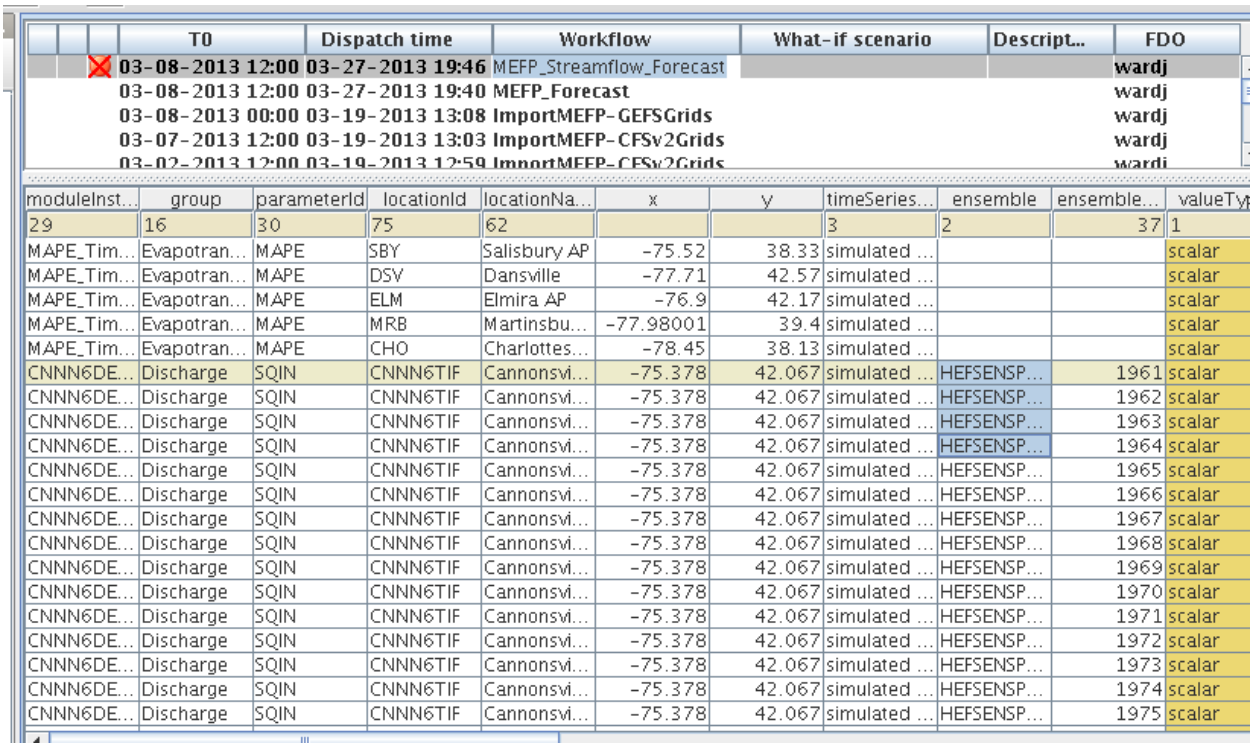
Confirming the configuration can be done in the *installation stand-alone*, or whatever stand-alone was used to test the EnsPost configuration. The general process uses standard CHPS tools and is as follows:

1. Execute the workflow modified in Step 2.2.2 using the CHPS **Manual Forecast Dialog**.

2. Confirm that ensembles of streamflow were post-processed for the locations in question using the CHPS **Database Viewer**.

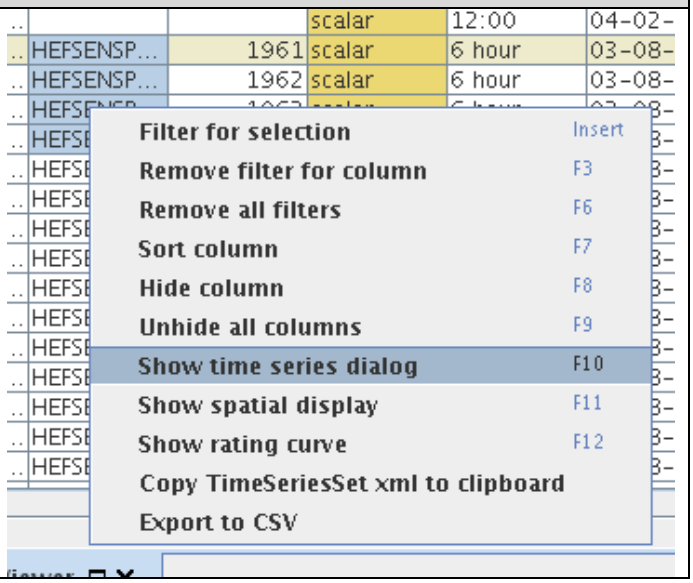
#	Action	Expected Results
1	Start FEWS using the installation standalone: ***cd*** <*region_dir*> ***cd ..*** ***./hefsPlugins/fews_hefsPlugins.sh.rboff ##rfc_sa &*** The *.rboff script is used for testing purposes.	FEWS will be started. The splash screen displayed will vary by RFC. The default splash screen is: After a short time, the CHPS interface will open.
2	Click on the **Manual Forecast Button**.	
3	The **Manual Forecast Panel** will open, allowing you to select a workflow to run. In the Workflow List, select the workflow modified in Section 2.2.2.	

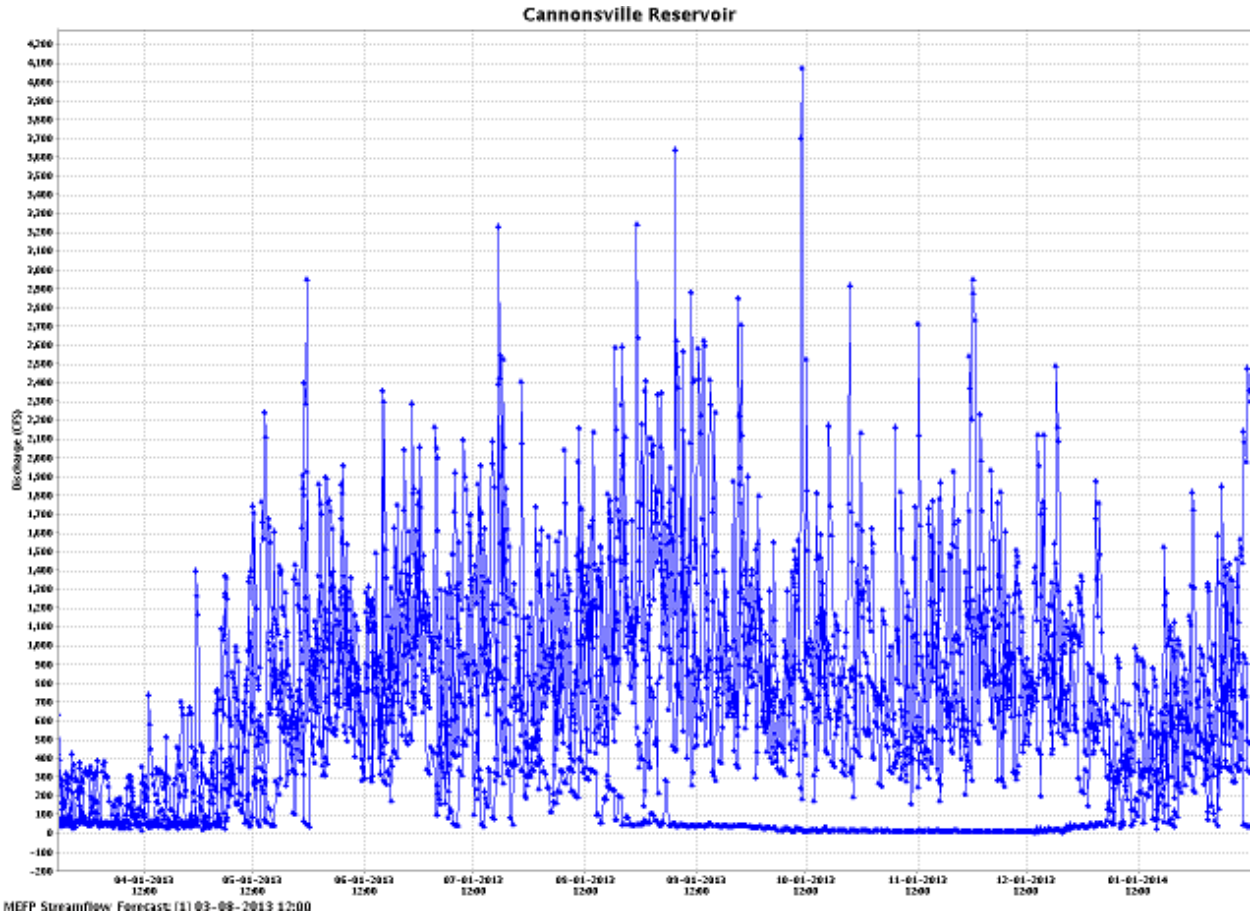
#	Action	Expected Results
4	Set the forecast length appropriately given the length of the meteorological data (MAP, MAT, MAPE) available to use as input for the ensemble streamflow forecast. If MEFP is used, then the length is dictated by the amount of raw climatology appended to the end via a merge operation. If raw climatology is not appended to the end, then the length is the dictated by the length of the time series output by MEFP.	
5	In the **Manual Forecast Panel**, click **Run**.	
6	When the workflow is done, you should see "Workflow <workflow modified in Section 2.2.3> Completed" in the logs panel. For example, "Workflow HEFS Forecast Completed"	
7	Open the **Database Viewer** in order to confirm that EnsPost successfully ran. Select the workflow that was just completed in the database viewer, and find four entries, with the same locationId and an ensembleId of HEFSENSPOST.	



T0	Dispatch time	Workflow	What-if scenario	Descript...	FDO
03-08-2013 12:00	03-27-2013 19:46	MEFP_Streamflow_Forecast			wardj
03-08-2013 12:00	03-27-2013 19:40	MEFP_Forecast			wardj
03-08-2013 00:00	03-19-2013 13:08	ImportMEFP-GEFSGrids			wardj
03-07-2013 12:00	03-19-2013 13:03	ImportMEFP-CFSv2Grids			wardj
03-02-2013 12:00	03-19-2013 12:59	ImportMEFP-CFSv2Grids			wardj

moduleInst...	group	parameterId	locationId	locationNa...	x	y	timeSeries...	ensemble	ensemble...	valueTy
29	16	30	75	62			3	2	37	1
MAPE_Tim...	Evapotran...	MAPE	SBY	Salisbury AP	-75.52	38.33	simulated ...			scalar
MAPE_Tim...	Evapotran...	MAPE	DSV	Dansville	-77.71	42.57	simulated ...			scalar
MAPE_Tim...	Evapotran...	MAPE	ELM	Elmira AP	-76.9	42.17	simulated ...			scalar
MAPE_Tim...	Evapotran...	MAPE	MRB	Martinsbu...	-77.98001	39.4	simulated ...			scalar
MAPE_Tim...	Evapotran...	MAPE	CHO	Charlottes...	-78.45	38.13	simulated ...			scalar
CNNN6DE...	Discharge	SQIN	CNNN6TIF	Cannonsvi...	-75.378	42.067	simulated ...	HEFSENSP...	1961	scalar
CNNN6DE...	Discharge	SQIN	CNNN6TIF	Cannonsvi...	-75.378	42.067	simulated ...	HEFSENSP...	1962	scalar
CNNN6DE...	Discharge	SQIN	CNNN6TIF	Cannonsvi...	-75.378	42.067	simulated ...	HEFSENSP...	1963	scalar
CNNN6DE...	Discharge	SQIN	CNNN6TIF	Cannonsvi...	-75.378	42.067	simulated ...	HEFSENSP...	1964	scalar
CNNN6DE...	Discharge	SQIN	CNNN6TIF	Cannonsvi...	-75.378	42.067	simulated ...	HEFSENSP...	1965	scalar
CNNN6DE...	Discharge	SQIN	CNNN6TIF	Cannonsvi...	-75.378	42.067	simulated ...	HEFSENSP...	1966	scalar
CNNN6DE...	Discharge	SQIN	CNNN6TIF	Cannonsvi...	-75.378	42.067	simulated ...	HEFSENSP...	1967	scalar
CNNN6DE...	Discharge	SQIN	CNNN6TIF	Cannonsvi...	-75.378	42.067	simulated ...	HEFSENSP...	1968	scalar
CNNN6DE...	Discharge	SQIN	CNNN6TIF	Cannonsvi...	-75.378	42.067	simulated ...	HEFSENSP...	1969	scalar
CNNN6DE...	Discharge	SQIN	CNNN6TIF	Cannonsvi...	-75.378	42.067	simulated ...	HEFSENSP...	1970	scalar
CNNN6DE...	Discharge	SQIN	CNNN6TIF	Cannonsvi...	-75.378	42.067	simulated ...	HEFSENSP...	1971	scalar
CNNN6DE...	Discharge	SQIN	CNNN6TIF	Cannonsvi...	-75.378	42.067	simulated ...	HEFSENSP...	1972	scalar
CNNN6DE...	Discharge	SQIN	CNNN6TIF	Cannonsvi...	-75.378	42.067	simulated ...	HEFSENSP...	1973	scalar
CNNN6DE...	Discharge	SQIN	CNNN6TIF	Cannonsvi...	-75.378	42.067	simulated ...	HEFSENSP...	1974	scalar
CNNN6DE...	Discharge	SQIN	CNNN6TIF	Cannonsvi...	-75.378	42.067	simulated ...	HEFSENSP...	1975	scalar

#	Action	Expected Results
8	Right click to **Show time series dialog**.	


Cannonsville Reservoir
Discharge (CFS)
MEFP Streamflow Forecast (1) 03-08-2013 12:00

2.4 *Synchronize Changes to the Central Server (Required)*

Once the installation steps above are complete, including confirmation, port all of the configuration changes to the central server. Four files are modified while all others are new; see Figure 1 in Section 1.6 for a list (files in blue boxes are modified and those in red boxes are new).

Additionally, add the ENS_POST_ROOT_DIR property to all fss global property files. Do the following:

1) Open the following files for each FSS## (replace ?? with the 2 letter RFC abbreviation)

   /awips/chps_local/fss/??rfc/FSS##/FewsShell/??rfc/fss_global.properties

2) Add the following properties (The value should match the central location which was chosen to write out estimated parameters in the EnsPostPE Configuration Guide):

   ENS_POST_ROOT_DIR = <*ens_post_root_dir*>

Use the FEWS configuration manager (cm) tool for installing the files in the central server (place the changes in the FEWS OC, validate, and synchronize/upload the changes).

TO ADD A NEW SEGMENT
Repeat this synchronization step for any new created or modified files.

3 Adding Segments and Forecast Groups

Before adding a new segments to the EnsPost components, do the following:

1. Estimate parameters for all of the new segments. See Section 3 of the *EnsPostPE Configuration Guide* for basic instructions on how to estimate parameters.

3.1 *Adding a New Segment*

To add a new segment:

- Identify the location IDs for the segments for which EnsPost will be run to post process streamflow ensembles.

The actions described in the following sections must be repeated in order

- Section 2.2.1 – Create a new EnsPost Module for the location.

  Optional: Instead, add the new segment to an existing EnsPost module. In that case, it is recommended you change the name of the module so that it is not segment specific (perhaps make it forecast group specific) and remove the reference to the old name from the workflow configuration, ModuleInstanceDescriptors.xml, and ModuleInstanceSets.xml files appropriately (see below). See Section 2.2.1.

- Section 2.2.2 – Modify the workflows to execute the new segment's EnsPost module.

- Section 2.2.3 – Add the created modules to the ModuleInstanceDescriptors.xml file.

- Section 2.2.4 – Add the created modules to the sets defined in ModuleInstanceSets.xml.

- Section 2.3 – Confirm the installation for the new segment.

- Section 2.4 – Synchronize changes to the central server.

4 Tips and Trouble Shooting

This section provides basic tips and troubleshooting related to the configuration of the EnsPost components.

4.1 *Tips*

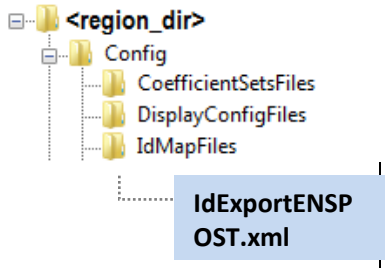
4.1.1 Modify new File: IdExportENSPOST.xml & IdImportENSPOST.xml (Optional)

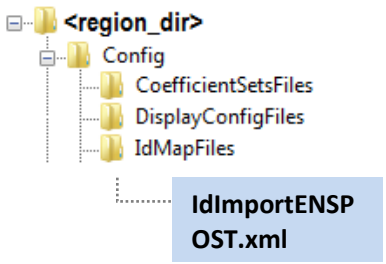
*Perform this step **only** if necessary if the location IDs in the parameter files don't match the* locationId *of the input streamflow ensemble. However, the **recommended** method to handle the mismatch of location ID's is to define the location ID in the run file properties (See Section 2.2.1, optional run file properties)*

Action: Modify the files

<*configuration_dir*>/IdMapFiles/IdExportENSPOST.xml
<*configuration_dir*>/IdMapFiles/IdImportENSPOST.xml

to define id-mappings if necessary. In those cases, id-mappings should be defined in order to map the location ID of the ensemble to the generated parameter files. See the examples below.

Standard Location: <*configuration_dir*>**/IdMapFiles**	**Contents:** ***IdExportENSPOST.xml***
	<?xml version="1.0" encoding="UTF-8"?> <idMap version="1.1" xmlns="http://www.wldelft.nl/fews" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.wldelft.nl/fews http://chps1/schemas/idMap.xsd"> <map internalParameter="SQIN" internalLocation="CNNN6TIF" externalParameter="SQIN" externalLocation="CNNN6"/> <map internalParameter="SQIN" internalLocation="WALN6TOT" externalParameter="QINE" externalLocation="WALN6"/> <enableOneToOneMapping/> </idMap>

Standard Location: <*configuration_dir*>**/IdMapFiles**	**Contents:** ***IdImportENSPOST.xml***
	<?xml version="1.0" encoding="UTF-8"?> <idMap version="1.1" xmlns="http://www.wldelft.nl/fews" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.wldelft.nl/fews http://fews.wldelft.nl/schemas/version1.0/idMap.xsd"> <map internalParameter="SQIN" internalLocation="WALN6DEL" externalParameter="QINE" externalLocation="WALN6"/> <map internalParameter="SQIN" internalLocation="CNNN6DEL" externalParameter="SQIN" externalLocation="CNNN6"/> <enableOneToOneMapping/> </idMap>

4.2 *Troubleshooting*

4.2.1 The latest observed value could not be computed; some required observed time series values are missing.

Before post processing a streamflow ensemble, EnsPost validates the observed timeseries to make sure there are no missing values. If the above error message occurs, check to make sure QINE data was populated from the most recent forecast run.

4.2.2 Error executing model: Failed to setup ensemble to post-process: ….enspost.parameters.tgz (No such file or directory)

EnsPost is unable to find the estimated parameters. Double check all of the run file properties (See section 2.2.1) to determine if they're pointing to the right location and/or file.